

***Remarks***

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 14-26 are pending in the application, with claims 14, 20, and 26 being the independent claims. Claim 26 is sought to be added. Claims 14-16, 19, 20, and 23-25 are sought to be amended. Support for these amendments is found, for example, in paragraphs [0005] and [0026] of the instant specification. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding rejections and that they be withdrawn.

***Rejections under 35 U.S.C. § 103***

**Claims 14-16, 18-21, and 23-25**

In paragraph 3 of the Office Action, claims 14-16, 18-21, and 23-25 were rejected under 35 U.S.C. § 103(a) as allegedly being anticipated by U.S. Patent No. 5,155,370 to Osawa *et al.* (hereinafter "Osawa"). Applicant respectfully traverses this rejection.

Claim 14 recites features that distinguish over the cited reference. For example, claim 14 recites:

a superluminescent device (SLD) that transmits a light beam having a longitudinal coherence length based on at least one optical parameter associated with one or more optical elements of the position determining system, wherein the longitudinal coherence length substantially eliminates ghost or spurious reflections from the one or more optical elements present during exposure of a pattern in a lithography tool  
...



Independent claim 20 recites similar distinguishing features, using respective language, in addition to additional distinguishing features.

Though Osawa teaches or suggests a coherence length "lc" of a semiconductor laser diode, Osawa does not teach or suggest a longitudinal coherence length that is determined based on at least one optical parameter associated with one or more optical elements of the position determining system, as recited in claims 14 and 20. Osawa further fails to use the aforementioned longitudinal coherence length in the manner set forth in claims 14 and 20, such as to avoid ghost or spurious reflections from the one or more optical elements present during exposure of a pattern in a lithography tool.

Therefore, Osawa does not teach or suggest each and every feature of claims 14 and 20, and does not render it obvious.

Accordingly, Applicant respectfully requests that this rejection be reconsidered and withdrawn, and that claims 14 and 20, and their respective dependent claims, be passed to allowance.

**Claims 17 and 22**

In paragraph 4 of the Office Action, claims 17 and 22 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Osawa in view of U.S. Patent No. 4,821,277 to Alphonse *et al.* (hereinafter "Alphonse"). Applicant respectfully traverses this rejection.

Claims 17 and 22 depend from claims 14 and 20, respectively, and further recite features that distinguish from the cited references. On page 12 of the Office Action, the Examiner states, which Applicant does not acquiesce to, Alphonse teaches or suggests a super luminescent device that comprises a laser diode having at least one anti-reflective



surface. However, Alphonse is not used to teach or suggest at least the distinguishing features of claim 14 and 20, nor does Alphonse teach or suggest these features. Thus, Alphonse does not resolve the deficiencies of Osawa. Accordingly, Applicant respectfully requests that this rejection be reconsidered and withdrawn, and that claims 17 and 22 be passed to allowance for at least the same reasons as their respective parent claims 14 and 20, and further in view of their own distinguishing features.

***New Claim 26***

Claim 26 recites features that distinguish over the cited reference. For example, claim 26 recites:

a lens system configured to direct the light beam to be diffracted from the alignment mark on a wafer, the diffracted light causing ghost or spurious reflections through its interaction with the lens system;  
a sensor configured to use the diffracted light to determine a position of the alignment mark to produce a control signal related to the determined position; and  
a positioning system configured to align the substrate to receive a subsequent pattern based on the control signal,  
wherein the positioning system is configured to use the control signal to substantially eliminate the ghost or spurious reflections during receipt of the subsequent pattern by the substrate.

Osawa teaches a relative alignment of a mask 3M and a substrate 4W. (*See*, for example, col. 3, lines 35-39 of Osawa). In other words, Osawa's system would fail to work using beams 47' and 47" because of their passage only through substrate 4W since in that case there would be no information in these beams about mask 3M, required by Osawa's system to calculate the relative alignment. The Examiner states on page 3 of the Office Action that "Figure 2 fails to illustrate reflections of beam 47' from mask 3M



back to wafer 4W, the optical properties demonstrated by mask 3M in the generation of unwanted beam 47" would also generate unwanted reflections of beam 47' as it encountered the mask on the way to the detector." [sic]. Assuming arguendo that this was true, there is no teaching or suggestion in Osawa that those alleged unwanted reflections may be used independently of beams 47' and 47" to produce a control signal related to the determined position of the alignment mark on a wafer, as recited in claim 26. This is so because Osawa combines both 47' and 47" to calculate relative position of the mask 3M and substrate 4W. In contrast, claim 26 recites, using respective language, a sensor configured to use the diffracted light to determine a position of the alignment mark . . . and . . . to use the control signal to substantially eliminate the ghost or spurious reflections during receipt of the subsequent pattern by the substrate, and not using light diffracted in combination from a mask similar to mask 3M and substrate 4W, as required by Osawa. Therefore, Osawa does not teach or suggest each and every feature of claim 26, and does not render it obvious. Accordingly, Applicant respectfully requests that claim 26 be passed to allowance.

### ***Conclusion***

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite



Reply to Office Action of Nov. 6, 2007

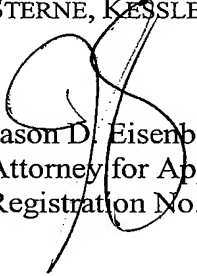
J. Christian SWINDAL  
Appl. No. 10/713,212

prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

  
Jason D. Eisenberg  
Attorney for Applicant  
Registration No. 43,447

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1100 New York Avenue, N.W.  
Washington, D.C. 20005-3934  
(202) 371-2600

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